

Customer No.: 31561
Application No.: 10/604,324
Docket No.: 9245-US-PA

Amendment

IN THE CLAIMS

Claim 1. (original) 1. A method of forming a plurality of bumps on a silicon wafer having an active surface, wherein the wafer further includes a plurality of contact pads distributed over the active surface and a passivation layer over the active surface that exposes the contact pads, the method comprising the steps of:

forming an adhesion layer over the active surface of the wafer, wherein the adhesion layer covers both the contact pads and the passivation layer;

forming at least one metallic layer over the adhesion layer;

patterning the adhesion layer and the metallic layer so that a residual portion of the adhesion layer and a residual portion of the metallic layer are formed over each contact pad;

forming a photoresist layer over the active surface of the wafer, wherein the photoresist layer has a plurality of openings that expose the metallic layer;

filling the openings with a flux material;

disposing a solder block into each opening;

conducting a reflow process so that the solder blocks are bonded to the metallic layer; and

removing the flux material and the photoresist layer.

Claim 2. (original) The method of claim 1, wherein material constituting the adhesion layer is selected from a group consisting of aluminum, titanium,

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titanium-tungsten alloy, chromium, chromium-copper alloy, copper and tantalum.

Claim 3. (original) The method of claim 1, wherein material constituting the metallic layer is selected from a group consisting of nickel-vanadium alloy, titanium nitride, tantalum nitride, nickel, chromium-copper alloy, chromium, copper and palladium.

Claim 4. (original) The method of claim 1, wherein material constituting the solder blocks includes lead-tin alloy.

Claim 5. (original) The method of claim 1, wherein material constituting the solder blocks includes lead-free alloy.

Claim 6. (original) The method of claim 5, wherein material constituting the solder blocks is selected from a group consisting of lead, gold, silver, copper, magnesium, bismuth, antimony, indium and zinc.

Claim 7. (original) The method of claim 1, wherein material constituting the contact pads is selected from a group consisting of copper and aluminum.

Claim 8. (original) The method of claim 1, wherein the solder block is ball shaped.

Claim 9. (original) A method of forming bumps over a carrier having a surface with a plurality of contact pads thereon, comprising the steps of:

forming an adhesion layer over the surface of the carrier, wherein the adhesion layer covers the contact pads;

forming at least one metallic layer over the adhesion layer;

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patterning the adhesion layer and the metallic layer so that a residual portion of the adhesion layer and a residual portion of the metallic layer are formed over each contact pad;

forming a patterned structure over the surface of the carrier, wherein the patterned structure has a plurality of openings that expose the metallic layer;

filling the openings with a flux material;

disposing a solder block into each opening;

conducting a reflow process so that the solder blocks are bonded to the metallic layer; and

removing the flux material and the patterned structure.

Claim 10. (original) The method of claim 9, wherein the carrier includes a silicon wafer.

Claim 11. (original) The method of claim 9, wherein the carrier includes a silicon wafer and a redistribution circuit layer, the redistribution circuit layer is formed over the silicon wafer, the surface of the carrier is a surface of the redistribution layer, the contact pads are located on the surface of the redistribution layer and the redistribution layer having openings exposing the contact pads.

Claim 12. (original) The method of claim 9, wherein the carrier includes a substrate board.

Claim 13. (original) The method of claim 9, wherein material constituting the adhesion layer is selected from a group consisting of aluminum, titanium,

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titanium-tungsten alloy, chromium, chromium-copper alloy, copper and tantalum.

Claim 14. (original) The method of claim 9, wherein material constituting the metallic layer is selected from a group consisting of nickel-vanadium alloy, titanium nitride, tantalum nitride, nickel, chromium-copper alloy, chromium, copper and palladium.

Claim 15. (original) The method of claim 9, wherein material constituting the solder blocks includes lead-tin alloy.

Claim 16. (original) The method of claim 9, wherein material constituting the solder blocks includes lead-free alloy.

Claim 17. (original) The method of claim 16, wherein material constituting the solder blocks is selected from a group consisting of lead, gold, silver, copper, magnesium, bismuth, antimony, indium and zinc.

Claim 18. (original) The method of claim 9, wherein the patterned structure is a photoresist layer.

Claim 19. (original) The method of claim 9, wherein material constituting the patterned structure is polymer.

Claim 20. (original) The method of claim 9, wherein material constituting the contact pads is selected from a group consisting of copper and aluminum.

Claim 21. (original) The method of claim 9, wherein the solder block is ball shaped.

Claims 22-30 (cancelled).